



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/563,274

01/04/2006

Teruhiro Shiono

10873.1778USWO

6393

53148

7590

10/28/2008

HAMRE, SCHUMANN, MUELLER & LARSON P.C.

P.O. BOX 2902-0902

MINNEAPOLIS, MN 55402

EXAMINER

CHU, KIM KWOK

ART UNIT

PAPER NUMBER

2627

MAIL DATE

DELIVERY MODE

10/28/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/563,274	<b>Applicant(s)</b> SHIONO ET AL.	
	<b>Examiner</b> Kim-Kwok CHU	<b>Art Unit</b> 2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on Pre-Amendment filed on 1/4/2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-10,13,14,16,18 and 19 is/are rejected.
- 7) ☒ Claim(s) 3,11,12,15 and 17 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 1/4/2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

Art Unit: 2627

***Drawings Objection***

1. The drawings are objected to because Figs. 7 and 8 should be labeled "PRIOR ART" according to Applicant's brief description of drawings in the filed specification. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 11 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, the last three lines, the limitation "when focused on the information recording medium, the reproduction light includes as its main component a polarized light component that is polarized perpendicular to the track direction of the information recording medium" is vague and indefinite since

Art Unit: 2627

functional claim language "reproduction light includes as its main component a polarized light component

(a) in Claim 11, line 11, the term "the second light source" lacks an antecedent basis.

Claim 12 not specifically mentioned above is indefinite based upon its dependence on the indefinite Claim 11.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --  
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 2, 4-7, 10, 13, 14, 16, 18 and 19 are rejected under 35 U.S.C. § 102(b) as being anticipated by Sugaya et al. (U.S. Patent 5,602,825).

Sugaya teaches the following:

(a) with respect to Claim 1, the optical information reproduction device comprising: an information recording medium 100 (Fig. 17) that includes a recording unit 207 (laser diode) capable of recording information three-dimensionally (Figs. 16A

Art Unit: 2627

and 16B; data recorded in layers of a three-dimensionally recording medium) and provided with a track (Fig. 3; abstract) having a specific track pitch (abstract), with which information is recorded by forming a plurality of recording marks 10 (pits) along the track of the recording unit by a mark length recording method (Fig. 3; pits 10 have length to represent data), and when the track direction of the recording marks is assumed to be their longitudinal direction and the direction perpendicular to the track direction is assumed to be their lateral direction (Fig. 3), for recording marks 10 located substantially in the same plane (Fig. 3), the total area of elongated recording marks 10, whose longitudinal length is greater than their lateral length (Fig. 1), is greater than the total area of recording marks having other than elongated shapes (Fig. 3; elongated data 10 cover more medium area than other non-data area); a first light source 207 (Fig. 17) for emitting reproduction light having a wavelength  $\lambda_1$ ; an objective lens 203 (Fig. 17) for focusing the reproduction light emitted from the first light source 207 on the recording unit (recording region/sector) of the information recording medium 100 (Fig. 17); and a first photodetector 212 (Fig. 17; column 10, lines 3) for detecting a reproduction signal from the reflected light from the recording unit, wherein the information recording medium 100 has a track

Art Unit: 2627

pitch of no more than 1.3 times the wavelength  $\lambda_1$  of the reproduction light (Fig. 3; abstract), and when focused on the information recording medium 100, the reproduction light includes as its main component 24 (Fig. 2) a polarized light component that is polarized perpendicular to the track direction of the information recording medium (Fig. 2; column 6, lines 32-44).

(b) with respect to Claim 2, the reproduction light focused on the recording unit (recording region/region) is linearly polarized light that is polarized perpendicular to the track direction of the information recording medium (Fig. 2).

(c) with respect to Claim 4, the first light source emits reproduction light that includes as its main component a polarized light component that is polarized perpendicular to the track direction of the information recording medium (Fig. 2).

(d) with respect to Claim 5, an optical component 209 (Fig. 17; polarizing beam splitter), located along the optical path between the first light source 207 and the objective lens 203, for switching the state of polarization of the reproduction light emitted from the first light source 207 so that the reproduction light focused on the recording unit (region/area) will include as its main component a polarized

Art Unit: 2627

light component that is polarized perpendicular to the track direction of the information recording medium (Fig. 2).

(e) with respect to Claim 6, the first light source 207 is a semiconductor laser (Fig. 17).

(f) with respect to Claim 7, the first light source 207 further emits recording light with a wavelength of  $\lambda_2$  (Fig. 17; laser emits a light with a wavelength range from  $\lambda_1$  to  $\lambda_2$ ).

(g) with respect to Claim 10, the first light source 207 (Fig. 17) further emits recording light with a wavelength of  $\lambda_2$  (Fig. 17; laser emits a light with a wavelength range from  $\lambda_1$  to  $\lambda_2$ ), the objective lens 203 focuses the recording light on a recording unit included in the recording unit (Fig. 17), and the recording light focused on the recording unit (recording region/sector) includes as its main component a polarized light component that is polarized perpendicular to the track direction of the information recording medium (Fig. 2).

(h) with respect to Claim 13, the first light source 207 (Fig. 17) further emits recording light with a wavelength of  $\lambda_2$ , the wavelength  $\lambda_1$  of the reproduction light is shorter than the wavelength  $\lambda_2$  of the recording light (Fig. 17; laser emits a light with a wavelength range from  $\lambda_1$  to  $\lambda_2$ ).

(i) with respect to Claim 14, the first light source 207 further emits recording light with a wavelength of  $\lambda_2$  (Fig. 17;

Art Unit: 2627

laser emits a light with a wavelength range from  $\lambda_1$  to  $\lambda_2$ ), the recording light is pulsed light (laser light is driven by pulse and therefore its generated beam is a pulse light), and information is recorded by using nonlinear absorption (recording medium has a nonlinear recording layer which discriminates light wavelengths).

(j) with respect to Claim 16, a surface area of a light-receiving component 212 (Fig. 17) provided in the first photodetector is set to (being focused on) an area over which light conveying (read/write) target information included in the reflected light is received (Fig. 17).

(k) with respect to Claim 18, the recording marks are voids (Fig. 1).

(l) with respect to Claim 19, the recording marks are recording pits produced by refractive index changes (Fig. 1; pits are formed by refractive index changes as a result of thermal deformation of the layers of the recording medium).



***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 8 and 9, are rejected under 35 U.S.C. 103 (a) as being unpatentable over Sugaya et al. (U.S. Patent 5,602,825) in view of Fukakusa et al. (U.S. Patent 6,256,283).

Sugaya teaches an optical information reproduction device  $\neq$  very similar to that of the present invention. However, Sugaya does not teach the following:

(a) with respect to Claim 8, a second light source for emitting recording light with a wavelength of  $\lambda_2$ ;

(b) with respect to Claim 9, the second light source is a semiconductor laser.

Fukakusa et al. teach the following:

(a) a second light source for emitting recording light with a wavelength of  $\lambda_2$  (Fig. 1);

Art Unit: 2627

(b) the second light source is a semiconductor laser (Fig. 1).

A recording medium having multiple recording layers such as Sugaya's can be used as a hybrid storage medium where each layer has its own recording density, speed and laser power requirement etc. In other words, the hybrid medium can be a combination of CD and DVD recording medium. Since different recording type of medium such as CD and DVD requires different read/write laser beams respectively, it would have been obvious to one of ordinary skill in the art to add a second laser source such as Fukakusa's to the Sugaya's information device so that an additional light beam with different wavelength, power etc. can be used to read/write a hybrid recording medium modified from Sugaya's recording medium.

***Allowable Subject Matter***

8. Claims 3, 15 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. Claims 11 and 12 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

10. The following is an Examiner's statement of reasons for the indication of allowable subject matter:

As in claim 3, the prior art of record fails to teach or fairly suggest an optical information reproduction device having following feature:

(a) the reproduction light focused on the recording unit is elliptically polarized light whose main component is a polarized light component that is polarized perpendicular to the track direction of the information recording medium.

Art Unit: 2627

As in claim 11, the prior art of record fails to teach or fairly suggest an optical information reproduction device having following feature:

(a) the wavelength  $\lambda_1$  of the reproduction light is different from the wavelength  $\lambda_2$ , of the recording light and the optical information reproduction device further comprises an optical component, located along the optical path between the first light source and the objective lens, for switching between a polarization state of reproduction light emitted from the first light source and a polarization state of recording light emitted from the first light source or a second light source, and for utilizing this difference in wavelength so that the reproduction light focused on the recording unit will include as its main component a polarized light component that is polarized perpendicular to the track direction of the recording unit, and so that the recording light focused on the recording unit will be circularly polarized light.

As in claim 15, the prior art of record fails to teach or fairly suggest an optical information reproduction device having following feature:

(a) a pinhole plate that is disposed along the optical path between the information recording medium and the first

Art Unit: 2627

photodetector, and has a pinhole that transmits light conveying target information included in the reflected light.

The features indicated above, in combination with the other elements of the claims, are not anticipated by, nor made obvious over, the prior art of record.

### ***Related Prior Art***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sumi et al. (6,243,326) is pertinent because Sumi teaches an optical information device having a pulse light beam and a recording medium having track pitch.

Kasowaki (5,406,545) is pertinent because Kasowaki teaches a recording medium having track pitch.

Art Unit: 2627

12. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Kim CHU whose telephone number is (571) 272-7585 between 9:30 am to 6:00 pm, Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa Nguyen, can be reached on (571) 272-7579.

The fax number for the organization where this application or proceeding is assigned is (571) 273-8300

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished application is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9191 (toll free).

/Kim-Kwok CHU/

Examiner AU2627

October 13, 2008  
(571) 272-7585

/HOA T NGUYEN/

Supervisory Patent Examiner, Art Unit 2627